TITLE 180 CONTROL OF RADIATION

CHAPTER 11 REQUIREMENTS FOR RADON AND RADON PROGENY MEASUREMENT AND MITIGATION SERVICES

FORMS

Radon Measurement Specialist or Technician License Application
Radon Mitigation Specialist or Technician License Application
Radon Business License Application
Radon Laboratory Approval Application

The following documents are available electronically at http://www.epa.gov/iaq/radon/pubs/mitstds.html

EPA 402-R-93-078, October 1993 (Revised April 1994)
EPA 402-R-92-003 May 1992
EPA 402-R-92-004 June 1993

Other EPA documents are available at http://www.epa.gov/iaq/radon/pubs/
If you need a hard copy of the attachment or have any questions please contact:

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TITLE 180 CONTROL OF RADIATION

CHAPTER 11 REQUIREMENTS FOR RADON AND RADON PROGENY MEASUREMENT AND MITIGATION SERVICES

11-001 SCOPE AND AUTHORITY

11-001.01 180 NAC 11 provides for the licensure of radon measurement specialists, radon measurement technicians, radon measurement businesses, radon mitigation specialists, radon mitigation technicians, and radon mitigation businesses. The regulations are authorized by and implement the Nebraska Radiation Control Act, Neb. Rev. Stat. §§71-3501 to 3519.

11-001.02 In addition to the requirements of 180 NAC 11, all licensees are subject to 180 NAC 1, 4, 10, 17 and 18; and 3-010, 3-011.02, 3-018, 3-019, 3-020 and 3-021.

11-001.03 Additional authority for these regulations are found in the Uniform Licensing Law, Neb. Rev. Stat. §§71-162 to 71-162.05, Administrative Procedure Act and 184 NAC 1.

11-002 DEFINITIONS:

Attest/Attestation means that the individual declares that all statements on the application/petition are true and complete.

Backdrafting means a condition where the normal movement of combustion products up a flue, resulting from the buoyant forces on the hot gases, is reversed, so that the combustion products can enter the house. Backdrafting of combustion appliances can occur when depressurization in the house overwhelms the buoyant force on the hot gases and can also be caused by high air pressures or blockage at the chimney or flue termination.

Backer Rod means a semi-rigid foam material resembling a rope of various diameters used to fill around pipes, etc. to assist in making a sealed penetration.

Block Wall Depressurization means a radon mitigation technique that depressurizes the void network within a block wall foundation by drawing air from inside the wall and venting it to the outside.

Client means the person, persons, or company that contracts with a radon mitigation business or specialist to install a radon reduction system in a building.

Combination Foundations means buildings constructed with more than one foundation type such as basement/crawlspace or basement/slab-on-grade.

Combustion Appliance means any device which utilizes the ignition of a fuel to perform work for a specific purpose including but not limited to heating, drying, cooling, and refrigeration.

Communication Test means a diagnostic test designed to qualitatively measure the ability of a suction field and air flow to extend through the material beneath a concrete slab floor and thus evaluate the potential effectiveness of a sub-slab depressurization system.

Crawlspace Depressurization means a radon control technique designed to achieve lower air pressure in the crawlspace relative to indoor air pressure by use of a fan-powered vent drawing air from within the crawlspace.

Department means the Department of Health and Human Services Regulation and Licensure.

Diagnostic Tests means tests performed or procedures used to determine appropriate radon mitigation systems for a building.

Drain Tile Loop means a continuous length of drain tile or perforated pipe extending around all or part of the internal or external perimeter of a basement or crawlspace footing.

Mechanically Ventilated Crawlspace System means a radon control technique designed to increase ventilation within a crawlspace, achieve higher air pressure in the crawlspace relative to air pressure in the soil beneath the crawlspace, or achieve lower air pressure in the crawlspace relative to air pressure in the living spaces, by use of a fan.

Mitigation means any action taken to reduce radon or radon progeny concentrations in the indoor atmosphere or to prevent entry of radon or radon progeny into the atmosphere, to include but not be limited to, application of materials, installation of systems, or any repair or alteration of a building or design.

Mitigation System means any system or materials installed for the purpose of reducing radon or radon progeny concentrations.

Natural Draft Appliance means any combustion appliance that does not have fanforced combustion venting and therefore is more likely to be susceptible to backdrafting.

Perimeter Channel Drain means a means for collecting water in a basement by means of a large gap or channel between the concrete floor and the wall. Collected water may flow to aggregate beneath the slot (“French Drain”) or to a sump where it can be drained or pumped away.

Picocurie per liter (pCi/l) means 2.22 transformations per minute of radioactive material per liter of air.

Pressure Field Extension means the distance that a pressure change is induced in the sub-slab area, measured from a single or multiple suction points.

Radon means the radioactive noble gas radon-222 (Rn-222) and as used in these regulations includes radon progeny.

Radon Measurement Business means a person, including a laboratory, who analyzes or tests for and measures radon or radon progeny concentrations and which employs one or more radon measurement specialist.

Radon Measurement Specialist means an individual who performs radon or radon progeny measurements for a radon measurement business; or provides professional advice on radon or radon progeny measurements, health risks, radon-related exposure, radon entry routes, or other radon-related activities; and may perform the duties of a radon measurement technician.

Radon Measurement Technician means an individual who performs radon or radon progeny measurement activities or provides information on test results for a radon measurement business.

Radon Mitigation Business means a person who designs or installs systems in existing buildings to mitigate radon or radon progeny and which employs one or more radon mitigation specialist.

Radon Mitigation Specialist means an individual who designs mitigation systems, or an individual who performs and evaluates diagnostic tests to determine appropriate radon or radon progeny mitigation systems and may perform the duties of a radon mitigation technician for a radon mitigation business.

Radon Mitigation Technician means an individual who installs or supervises the installation of radon or radon progeny mitigation systems on existing buildings for a radon mitigation business.

Radon Progeny means the short-lived radionuclides formed as a result of the decay of radon-222, including polonium-218, lead-214, bismuth-214, and polonium-214.

Passive New Construction System means a system installed in new construction that relies solely on the convective air flow upward in the vent pipe for sub-slab depressurization and consists of a vertical vent pipe routed through conditioned space from the suction pit to 12 inches above the roof.

Radon resistant new construction (RRNC) means the established standards and techniques for control of radon by using a passive new construction system, as described in the “International Residential Code (IRC) for One and Two Family Dwellings,” International Code Council, 2000, or any substantially equivalent techniques.

Re-entrainment means the unintended re-entry into a building of radon that is being exhausted from the vent of a radon mitigation system.

Soil Gas means the gas mixture present in soil which may contain radon.

Soil Gas Retarder means a continuous membrane or other comparable material used to retard the flow of soil gases into a building.

Stack Effect means the overall upward movement of air inside a building that results from heated air rising and escaping through openings in the building envelope, thus causing indoor air pressure in the lower portions of a building to be lower than the pressure in the soil beneath or surrounding the building foundation.

Sub-Membrane Depressurization means a radon control technique designed to achieve lower air pressure in the space under a soil gas retarder membrane laid on the crawlspace floor, relative to air pressure in the crawlspace, by use of a fan-powered vent drawing air from beneath the membrane.

Sub-Slab Depressurization (Active) means a radon control technique designed to achieve lower sub-slab air pressure relative to indoor air pressure by use if a fan-powered vent drawing air from beneath the concrete slab.

Sub-Slab Depressurization (Passive) means a radon control technique designed to achieve lower sub-slab air pressure relative to indoor air pressure by use of a vent pipe (without a fan) routed through the conditioned space of a building and connecting the sub-slab area to the outdoor air. This system relies primarily on the convective flow of warmed air upward in the vent to draw air from beneath the concrete slab.

Working Level (WL) means the concentration of short-lived radon progeny that will result in 1.3E + 5 million electron volts of potential alpha particle energy per liter of air.

Working Level Month (WLM) means a unit of exposure used to express the accumulated human exposure to radon decay products. It is calculated by multiplying the average working level to which a person has been exposed by the number of hours exposed and dividing the product by 170.

11-003 EXEMPTIONS

11-003.01 The licensure requirements of 180 NAC 11 do not apply to:

1. Individuals measuring or mitigating the premises in which they reside.
2. Federal, state, county and local health departments and their employees who provide professional advice on radon measurement or mitigation activities in the course of their assigned duties.
3. County extension agents and specialists of the Cooperative Extension Service of the University of Nebraska who provide professional advice on radon measurement or mitigation activities in the course of their assigned duties.
4. Persons who are employed for the purpose of disseminating educational information to the public, such as educational institutions or community action agencies, who perform radon screening services without charge to the recipient of the service in the course of their assigned duties.
5. An individual, business entity or government entity using radon resistant new construction techniques during new construction. Any radon measurement or

mitigation activity, including the activation of a passive new construction system with a fan, conducted after construction is complete must comply with 180 NAC 11.

11-004 GENERAL PROVISIONS

11-004.01 Beginning on October 30, 1996, no person may provide services for the measurement or mitigation of the presence of radon in the State of Nebraska unless such person has been licensed as provided in 180 NAC 11. These regulations in no way exempt any person from other state or local occupational licensure requirements.

11-004.02 No license will be approved unless the following conditions have been met:

1. The applicant has not been found to be in violation of the Act, or 180 NAC 11 and has not had a license or certification terminated.
2. The applicant has filed an accurate and complete license application with the license fee.
3. The applicant is qualified to perform the activities for which s/he is seeking licensure, including the training and experience required in 180 NAC 11 and that the applicant's proposed equipment and procedures are adequate to minimize danger to the public health and safety or property and are in compliance with municipal, county, state and federal laws and regulations.

11-004.03 Requirements for continued licensure must include, at a minimum, the following conditions:

1. The licensee must conduct his/her activities as described in the approved license and in accordance with provisions of the Act, all sections of these regulations, and all other related municipal, county, state, and federal laws and regulations.
2. The licensee must allow authorized representatives of the Department to have access during normal business hours to his/her facilities, offices and files for inspection and examination of radon-related records and test procedures. The licensee must also allow authorized representatives of the Department to accompany him/her while performing any radon measurement or mitigation activities for the purpose of inspecting these activities, with the approval of the property owner or resident on whose property such activity is being performed.
3. The licensee must provide documentation that they meet the proficiency requirements, including continuing education, specified in 180 NAC 11-013.
4. Pay the renewal fee as prescribed in 180 NAC 11-017.
5. Pay $10 per day for each day s/he practiced after the expiration date of his/her license.
6. Respond to the following questions:

    a. Has your license in any profession in another state been revoked, suspended, limited, or disciplined in any manner?
    b. Have you been convicted of a misdemeanor or felony?

These questions relate to the time period since the last renewal of the license or during the time period since initial licensure in Nebraska if such occurred within the year prior to the license expiration date.

7. If any disciplinary action was taken against the applicant's license by another state, an official copy of the disciplinary action, including charges and disposition must be provided.
8. If the licensee has been convicted of a felony or misdemeanor, the licensee must cause to be submitted to the Department:

   a. Official Court Record, which includes charges and disposition;
   b. Copies of arrest records;
   c. A letter from the licensee explaining the nature of the conviction;
   d. All addiction/mental health evaluations and proof of treatment, if the conviction involved a drug and/or alcohol related offense and if treatment was obtained and/or required; and
   e. A letter from the probation officer addressing probationary conditions and current status, if the applicant is currently on probation.

9. The licensee must remain in compliance with the Act, and 180 NAC 11. Any changes in the information provided in the original or renewal application, including changes in licensed personnel, must be submitted as an amendment request to the Department for approval prior to implementation.

11-004.04 All licenses issued by the Department under 180 NAC 11 will expire on March 31 of each year (unless renewed as provided below.) No radon measurement or mitigation activity will be conducted after the expiration of the term of the license.

11-004.05 An application for annual license renewal must be on a form provided by the Department and must be accompanied by the fee specified in 180 NAC 11-017. A license renewal is issued or denied according to the criteria set forth in 180 NAC 11.

1. First Notice: At least 30 days before March 31 of each year, the Department will send a renewal notice by means of regular mail to each licensee at the licensee's last place of residence as noted in the records of the Department. It is the responsibility of the licensee prior to the renewal period to notify the Department of any name and/or address changes.

   The renewal notice must specify:

   (1) The name of the licensee;
   (2) The licensee's last known address of record;
   (3) The license number;
   (4) The expiration date of the license;
   (5) The renewal fee as prescribed in 180 NAC 11-017; and
   (6) The number of continuing education hours required for renewal.

   b. The licensee must apply for renewal by submitting to the Department:

(1) The renewal notice;
(2) The renewal fee;
(3) The licensee's social security number;
(4) Attestation of completing continuing education required under 180 NAC 11-013; and
(5) Documentation relating to misdemeanor or felony conviction(s) or licensure revocation, suspension, limitation or disciplinary action (if applicable).

2. Second Notice: The Department will send to each licensee who fails to renew his/her license in response to the first notice, a second notice of renewal in accordance with the requirements of 180 NAC 11.

a. The notice must specify:

(1) That the licensee failed to pay the renewal fee;
(2) That the license has expired;
(3) That the licensee is subject to an administrative penalty under 180 NAC 11-018 if s/he practices after the expiration date;
(4) That upon receipt of the renewal fee, together with an additional late fee of $25, and documentation of continuing competency hours within that time, no order of revocation will be entered; and
(5) That upon failure to receive $25 in addition to the regular renewal fee, and documentation of continuing competency hours, the license will be revoked as specified in 180 NAC 11.

b. The licensee must apply for renewal by submitting to the Department:

(1) The renewal notice;
(2) The renewal fee and the additional late fee of $25;
(3) The licensee's social security number;
(4) Attestation by the licensee:
That s/he has not practiced in Nebraska since the expiration of her/his license; or
To the actual number of days practiced in Nebraska since the expiration of her/his license;
(5) Attestation of completing continuing education required under 180 NAC 11-013; and
(6) Documentation relating to misdemeanor or felony conviction(s) or licensure revocation, suspension, limitation or disciplinary action (if applicable).

11-004.06 Applications for initial and renewal license must be submitted along with the fees specified in 180 NAC 11-017 to the Department of Health and Human Services Regulation and Licensure, P.O. Box 95007, Lincoln, NE 68509-5007. Checks or money orders must be made payable to Department of Health and Human Services Regulation and Licensure.

11-004.07 All applications should clearly label any information considered proprietary and segregate such information from non-proprietary information to the extent possible (Neb. Rev. Stat. § 84-712.05(3) and Neb. Rev. Stat. § 87-502).

11-005 LICENSE REQUIREMENTS FOR RADON MEASUREMENT SPECIALISTS

11-005.01 The following qualifications are required for initial licensure as a radon measurement specialist:

1. The individual must submit an application that contains applicant name, social security number, mailing address (including city, state, and zip code) and phone number to the Department along with the fee specified in 180 NAC 11-017.

2. Within four years prior to application, the individual must have successfully completed a training course and passed an examination on radon measurements, approved by the Department under the requirements specified in 180 NAC 11-014.

3. The individual must meet the proficiency requirements of 180 NAC 11-013.01.

4. The individual must be at least the age of majority upon application.

11-006 LICENSE REQUIREMENTS FOR RADON MEASUREMENT TECHNICIANS

11-006.01 The following qualifications are required for initial licensure as a radon measurement technician:

1. The individual must submit an application that contains applicant name, social security number, mailing address (including city, state, and zip code) and phone number to the Department along with the fee specified in 180 NAC 11-017.

2. Within four years prior to application, the individual must have successfully completed a training course and passed an examination on radon measurements approved by the Department under the requirements specified in 180 NAC 11-014.

3. The individual must meet the proficiency requirements of 180 NAC 11-013.01.

11-007 LICENSE REQUIREMENTS FOR RADON MITIGATION SPECIALIST

11-007.01 The following qualifications are required for initial licensure as a radon mitigation specialist:

1. The individual must submit an application that contains applicant name, social security number, mailing address (including city, state, and zip code) and

phone number to the Department along with the fee specified in 180 NAC 11-017.

2. The applicant must possess any combination of two years of relevant post-secondary education or relevant work experience.

   a. Relevant post-secondary education means a curriculum in architecture, engineering, building construction, physical sciences, or related disciplines. One year of post-secondary education will consist of a minimum of 24 semester hours, of which at least ten hours must be in the above subject areas, or 36 quarter hours, of which at least 15 hours must be in the above subject areas.
   b. Relevant work experience means the design, construction and renovation of buildings, or associated heating, ventilation, and air conditioning systems.

3. Within four years prior to application, the individual must have successfully completed training courses on radon measurement and mitigation and passed examinations on radon measurement and mitigation approved by the Department under the requirements specified in 180 NAC 11-014.

4. The individual must meet the proficiency requirements of 180 NAC 11-013.02.

5. The individual must be at least the age of majority upon application.

11-008 LICENSE REQUIREMENTS FOR RADON MITIGATION TECHNICIANS

11-008.01 The following qualifications are required for initial licensure as a radon mitigation technician:

1. The individual must submit an application that contains applicant name, social security number, mailing address (including city, state, and zip code) and phone number to the Department along with the fee specified in 180 NAC 11-017.

2. The individual must have attained a minimum of one year experience in the building or construction trades. For purposes of 180 NAC 11, experience in the installation of mitigation systems under the supervision of a radon mitigation specialist will qualify as building experience.

3. Within four years prior to application, the individual must have successfully completed a training course and passed an examination on radon mitigation approved by the Department under the requirements specified in 180 NAC 11-014.

4. The individual must meet the proficiency requirements of 180 NAC 11-013.02.

11-009 LICENSE REQUIREMENTS FOR RADON MEASUREMENT BUSINESSES

11-009.01 The following are the requirements for licensure as a radon measurement business:

1. Submission of an application for a license which contains the applicant name, business name, mailing address (including city, state, zip code) and phone number to the Department, along with the fee specified in 180 NAC 11-017.

2. Description of all radon and radon measurement techniques or related services to be offered, including the purpose of each measurement service, the type and purpose of measurement equipment to be used in performing the service, and an explanation of how that equipment and procedure will meet the intended purpose.

3. Identification of radon measurement specialists and radon measurement technicians to be used by the business. The radon measurement business must maintain on staff or retain as a consultant a radon measurement specialist. All radon testing, including post-mitigation testing, will be performed only by radon measurement specialists or radon measurement technicians. This includes the initial placement and final retrieval of all measurement devices. The radon measurement specialist will direct the applicant's measurement activities and must review, approve, sign, and submit monthly reports to the Department containing the information specified in 180 NAC 11-015.01, inform clients of radon levels in accordance with the provisions of 180 NAC 11-015, assess quality assurance and quality control measures, evaluate operating procedures, and ensure compliance with state and federal regulations. The radon measurement specialist must be present during scheduled visits by the Department and must physically observe each radon measurement technician in the performance of his/her measurement duties at least once each calendar quarter to ensure adequate supervision. If no radon measurements are performed during an entire calendar quarter by any of the radon measurement technicians working for a radon measurement business, the visit and observation by the specialist are not required for that quarter. The quarterly visit and observations by the specialist must be resumed within the same calendar quarter in which measurement activities are resumed. The interval between visits and observations by the specialist must not exceed one year.

4. If a radon measurement business loses its radon measurement specialist, the radon measurement business must notify the Department in writing within five business days. The radon measurement business must obtain another radon measurement specialist within 30 days of the loss of the radon measurement specialist. Under this provision, the radon measurement business must not operate more than 60 days in any one calendar year without a radon measurement specialist.

5. Identification of the analytical laboratory to be used that has been determined proficient by the Department specified in 180 NAC 11-011. The radon

measurement business must notify the Department in writing within five business days of any change in the analytical laboratory used.

6. Development, disclosure, and adherence to a plan of quality control for each service and technique provided by the applicant to assure the reliability and validity of radon measurements.

7. Disclosure of all sample reporting forms mailed to clients, including any guidance provided concerning the need for further measurement or mitigation.

8. Disclosure of copies of current publications and advertisements of radon-related services made by the applicant.

9. Development, disclosure, and adherence to a health and safety program. Such a program must include measures to keep each employee's exposure as low as reasonably achievable.

10. Maintenance of the following records for five years:

    a. Records of all radon tests performed;
    b. Records of instrument calibrations and quality control;
    c. Records of completing proficiency requirements specified in 180 NAC 11-013, including completion of continuing education courses;
    d. Records of employee exposure to radon during employment;
    e. Copies of licenses for radon measurement specialists and radon measurement technicians employed or used as consultants.

11-010 LICENSE REQUIREMENTS FOR RADON MITIGATION BUSINESSES

11-010.01 The following are the requirements for licensure as a radon mitigation business:

1. Submission of an application for a license which contains the applicant name, business name, mailing address (including city, state, and zip code) and phone number to the Department, along with the fee specified in 180 NAC 11-017.

2. Description of all mitigation materials and systems offered, diagnostic tests performed, and other related services offered.

3. Identification of the radon mitigation specialists and radon mitigation technicians to be used by the business.

4. Identification of procedures and instrumentation used to perform diagnostic tests.

5. Disclosure of all reporting forms mailed to clients.

6. Disclosure of copies of current publications and advertisements of radon-related services made by the applicant.

7. Development, disclosure, and adherence to a health and safety program to limit employees' exposure to radon during the course of their employment. Such a program must include measures to keep each employee's exposure as low as reasonably achievable and must meet the requirements specified in 180 NAC 11-012.07.

8. The radon mitigation business must maintain on staff or retain as a consultant a radon mitigation specialist. The radon mitigation specialist will direct the applicant's mitigation activities, and must review, approve, sign, and submit monthly reports to the Department containing the information specified in 180 NAC 11-015.04, evaluate operating procedures, ensure compliance with state and federal regulations, and be responsible for evaluating diagnostic tests in a building and designing mitigation systems. The mitigation specialist must be present during scheduled visits by the Department and must physically observe each radon mitigation technician in the performance of his/her mitigation duties at least once each calendar quarter to ensure adequate supervision.

9. If a radon mitigation business loses its radon mitigation specialist, the radon mitigation business must notify the Department in writing within five business days. The radon mitigation business must obtain another radon mitigation specialist within 30 days of the loss. Under this provision, the radon mitigation business must not operate more than 60 days in any one calendar year without a radon mitigation specialist. If no radon mitigation activities are performed during an entire calendar quarter by any of the radon mitigation technicians working for a radon mitigation business, the visit and observation by the specialist are not required for that quarter. The quarterly visit and observations by the specialist must be resumed within the same calendar quarter in which mitigation activities are resumed. The interval between visits and observations by the specialist must not exceed one year.

10. The radon mitigation business must assure that radon mitigation system installations are performed under the supervision of a radon mitigation specialist or radon mitigation technician.

11. The radon mitigation business will provide all warranty information on the reduction of the radon level, or the proper functioning of mitigation equipment in writing to clients. Nothing in 180 NAC 11-010.01, item 11. limits warranties applicable to any client pursuant to any state or federal law.

12. The radon mitigation business must maintain at a minimum the following records for five years:

    a. Records of all mitigation work performed, including client name, address, diagnostic test results, a description of each mitigation system

and materials installed, pre-mitigation and post-mitigation measurements including method of measurement and all pertinent dates.

b. Records of mitigation plans developed and signed by a radon mitigation specialist.
c. Records of all instrument calibrations, contracts, and warranties on equipment installed.
d. Records of completing proficiency requirements specified in 180 NAC 11-013, including completion of continuing education courses.
e. Records of employee exposure to radon during employment.
f. Copies of the licenses for radon mitigation specialists and radon mitigation technicians employed or used as consultants.

11-011 APPROVAL OF RADON LABORATORIES

11-011.01 To apply for radon laboratory approval, a person must do all the following:

1. Submit a completed measurement business application form provided by the Department. Also include fees specified under 180 NAC 11-017.
2. Submit at least one completed measurement specialist application form provided by the Department. Also include fees specified under 180 NAC 11-017.
3. Submit a completed laboratory application form provided by the Department. The laboratory application form will include but not be limited to the following information:

    a. The applicant's name, address, and telephone number;
    b. Identification by manufacturer and model number of all instrumentation to be used in radon analysis;
    c. The frequency and method of calibration of instruments; and
    d. Proof of laboratory certification required under 180 NAC 11-011.02.

4. No additional fee will be assessed for laboratory approval other than the fees submitted for measurement business and specialist applications.

11-011.02 To be approved as a radon laboratory, a laboratory must have obtained laboratory certification from the National Environmental Health Association, the National Radon Safety Board, or a national proficiency testing program approved by the Department. To maintain approval as a radon laboratory, a laboratory must meet the requirements of 180 NAC 11-004, 11-009, 11-013, and 11-015.

11-011.03 Each laboratory approval issued is nontransferable. Each approval will initiate on April 1 and will expire on March 31 of each year. The operator of a radon laboratory may apply for renewal of approval by submitting an application for renewal that complies with the requirements of 180 NAC 11-011.01 and includes the appropriate fees. To have its approval renewed, the laboratory must document that it has maintained the certification status required by 180 NAC 11-011.02.

11-011.04 The Department may refuse to issue an approval and may revoke or suspend an approval issued under this rule if the operator of the laboratory fails to meet any of the criteria listed in 180 NAC 11-011.

11-012 MITIGATION SYSTEM INSTALLATION REQUIREMENTS

11-012.01 These requirements for installation of radon mitigation systems provide a basis for evaluating the quality of such installations. It provides the basis against which in-progress or completed inspections will be evaluated. Additional recommendations for radon mitigation systems are specified in the Radon Mitigation Standards, Publication No. EPA 402-R-93-078, October 1993 (Revised April 1994).

11-012.02 Radon mitigation specialists will be responsible for all radon mitigation systems installed by their firm or its subcontractors to ensure compliance with the requirements of 180 NAC 11-012.

11-012.03 Limitations

1. Where discrepancies exist between provisions of 180 NAC 11 and local codes or regulations, local codes will take precedence, except that the local codes will not take precedence with regard to alterations that may adversely impact the radon reduction functions for which such systems were originally designed and may adversely impact public health and safety regarding exposure to a radioactive element.

2. Compliance with these requirements does not guarantee reduction of indoor radon concentrations to any specific level.

3. The requirements specified in 180 NAC 11-012 will not apply to radon mitigation systems installed prior to April 6, 2003. However, if a radon mitigation system is found that does not comply with current standards, the licensee must recommend in writing to the client that the system be upgraded or altered to meet current standards. The licensee must obtain prior approval from the client before implementing any of the licensee's written recommendations.

4. Because of the wide variation in building design, size, operation and use, these requirements do not include detailed guidance on how to select the most appropriate mitigation strategy for a given building.

11-012.04 General Practices: The following general practices are required for all contacts between radon mitigation licensees and clients:

1. In the initial contact with a client, the specialist must review any available results from previous radon measurements to assist in developing an appropriate mitigation strategy. The specialist must inform the client when it is determined that previous radon measurements were not performed according to EPA protocols and must recommend retesting.

2. Based on guidance contained in US EPA's "A Citizen's Guide to Radon (Second Edition)," or subsequent revisions of that document, the licensee must refer the client to the discussions of interpreting indoor radon test results and the health risk associated with the radon level found in the building. The US EPA's "Consumer's Guide to Radon Reduction," is an appropriate reference for providing advice on actions to take to reduce indoor radon levels.

3. In dwellings with levels exceeding 100 pCi/l, the mitigation specialist must advise the client of temporary measures that can be used to reduce occupant exposure until a permanent mitigation system is installed. This may include temporary measures such as natural ventilation, mechanical ventilation with unconditioned outside air, limiting the occupants' exposure by minimizing the time spent in areas of the home with elevated radon levels, or any measures which effectively minimize occupant exposure.

   a. The mitigation specialist must not install a temporary system in lieu of a permanent mitigation system.
   b. Temporary radon reduction systems must be labeled as such. The label must be readable from at least three feet and must include a statement that the system is temporary and that it will be replaced with a permanent system within 30 days after the installation date of the temporary system. The label must also include the licensee's name, license number, phone number, and the installation date.
   c. If the equipment is not easily labeled, the notice must be posted on the electric service panel, or other prominent location.

11-012.05 The mitigation business must provide the following written information to the client prior to initiating any work:

1. The mitigation business license number,
2. The scope of the work to be completed including an estimate of the time needed to complete the work,
3. A statement indicating any known hazards associated with chemicals used in or as part of the installation and the potential need to ventilate work areas during and after the use of such materials,
4. An estimate of the installation cost and annual operating cost of the system, and
5. A statement indicating compliance with provisions of the Act, Title 180, and all other related municipal, county, state and federal laws and regulations.

11-012.06 Building Investigation

1. The licensee must conduct a thorough visual inspection of the building prior to initiating any radon mitigation work. The inspection is intended to identify any specific building characteristics and configurations (e.g., large cracks in slabs, exposed earth in crawlspaces, open stairways to basements) and operational conditions (e.g., continuously running HVAC systems or operational windows) that may affect the design, installation, and effectiveness of radon mitigation

systems.

2. As part of the building investigation, a floor-plan sketch will be developed (if not already in existence and readily available) that includes illustrations of the building foundation (slab-on-grade, basement, or crawlspace area.) The sketch should include the location of load-bearing walls, drain fixtures, and HVAC systems. It should be annotated to include suspected or confirmed radon entry points, results of any diagnostic testing, the anticipated layout of any radon mitigation system piping, and the anticipated locations of any vent fan and system warning devices for the envisioned mitigation systems. The sketch must be finalized during installation and must be included in the documentation specified in 180 NAC 11-012.13.

11-012.07 Worker Health and Safety: The following requirements that are specifically or uniquely applicable for the safety and protection of radon mitigation workers must be met:

1. The licensee must advise workers of the hazards of exposure to radon and the importance of protective measures when working in areas of elevated radon concentrations.

2. The licensee must have a worker protection plan on file that is available to all employees. Exception: A worker protection plan is not required for a licensee who is a sole proprietor unless required by local regulations.

3. Work areas must be ventilated to reduce worker exposure to radon decay products, dust, or other airborne pollutants. In work areas where ventilation is impractical or where ventilation cannot reduce radon levels to less than .3 WL or 30 pCi/l (based on a short-term diagnostic test), the licensee must ensure that appropriate respiratory protection is used.

4. Pending the development of an approved personal radon exposure device and a protocol for its use, licensees must record employee exposure to radon at each work site, based on the highest pre-mitigation indoor radon or working level measurement available and the time employees are exposed (without respirator protection) at that level unless on-site radon or radon decay product measurements are used to determine exact exposure.

5. Licensees must ensure that employees are exposed to no more than 4 working level months (WLM) over a 12 month period. (An equilibrium ratio of 50% must be used to convert radon exposure to WLM.)

6. In any planned work area where it is suspected that friable asbestos may exist and be disturbed, radon mitigation work must not be conducted until a determination is made by a properly trained or accredited person that such work will be undertaken in a manner which complies with applicable asbestos regulations.

7. Licensees must advise employees of the potential hazards, of the materials and supplies used, and to provide applicable Material Safety Data Sheets (MSDS) and explain the required safety procedures.

11-012.08 Systems Design

1. All radon mitigation systems must be designed and installed as permanent, integral additions to the building, except where a temporary system has been installed in accordance with 180 NAC 11-012.04 or if an exemption is applied for and approved by the Department.

2. All radon mitigation systems must be designed to avoid the creation of other health, safety, or environmental hazards to building occupants, such as backdrafting of natural draft combustion appliances.

3. All radon mitigation systems must be designed to maximize radon reduction while minimizing excess energy usage, avoiding compromise of moisture and temperature controls and other comfort features, and minimizing noise.

11-012.09 Systems Installation

1. Radon Vent Pipe Installation Requirements

   a. All vent stack piping must be solid, rigid pipe not less than 3 in. (75 cm) inside diameter (ID).

   b. All joints and connections in radon mitigation systems using plastic vent pipes must be permanently sealed with adhesives as specified by the manufacturer of the pipe material used. Exceptions include when installing vent pipes in sumps specified in 180 NAC 11-012.09, item 1(g) and when installing fans specified in 180 NAC 11-012.09, item 2(g). Joints or connections in other vent pipe materials must be made air tight.

   c. Radon vent pipes must be fastened to the structure of the building with hangers, strapping, or other supports that will adequately secure the vent material. Existing plumbing pipes, ducts, or mechanical equipment must not be used to support or secure a radon vent pipe.

   d. Supports for radon vent pipes must be installed at least every six feet on horizontal runs. Vertical runs must be secured either above or below the points of penetration through floors, ceilings, and roofs, or at least every eight feet on runs that do not penetrate floors, ceilings, or roofs.

   e. To prevent blockage of air flow into the bottom of radon vent pipes, these pipes must be supported or secured in a permanent manner that prevents their downward movement to the bottom of suction pits or sump pits, into the soil beneath an aggregate layer under a slab, or into

the soil beneath a soil-gas-retarder membrane.

f. Radon vent pipes must be installed in a configuration that ensures that any rain water or condensation within the pipes drains downward into the ground beneath the slab or soil-gas retarder membrane.

g. Radon vent pipes must not block access to any areas requiring maintenance or inspection. Radon vents must not be installed in front of or interfere with any light, opening, door, window or equipment access area required by code. If radon vent pipes are installed in sump pits, the system must be designed with removable or flexible couplings to facilitate removal of the sump pit cover for sump pump maintenance.

h. To prevent re-entrainment of radon, the point of discharge from vents of fan-powered soil depressurization and block wall depressurization systems must meet all of the following requirements: (1) be above the eave of the roof, (2) be ten feet or more above ground level, (3) be ten feet or more from any window, door, or other opening into conditioned spaces of the structure that is less than two feet below the exhaust point, and (4) be ten feet or more from any opening into an adjacent building. The total required distance (ten feet) from the point of discharge to openings in the structure may be measured either directly between the two points or be the sum of measurements made around intervening obstacles. Whenever possible, the exhaust point should be positioned above the highest eave of the building and as close to the roof ridge line as possible.

1. Radon Vent Fan Installation Requirements

a. Vent fans used in radon mitigation systems must be designed specifically for radon removal applications and must be designed or otherwise sealed to reduce the potential for leakage of soil gas from the fan housing.

b. Radon vent fans must be sized to provide the pressure difference and air flow characteristics necessary to achieve the radon reduction goals established for the specific mitigation project.

c. Radon vent fans used in active soil depressurization or block wall depressurization systems must not be installed below grade nor in the conditioned (heated/cooled) space of a building, nor in any basement, crawlspace, or other interior location directly beneath the conditioned spaces of a building. Acceptable locations for radon vent fans include attics not suitable for occupancy (including attics over living spaces and garages), garages that are not beneath conditioned spaces, or on the exterior of the building.

d. Radon vent fans must be installed in a configuration that avoids

condensation buildup in the fan housing. Fans must be installed in vertical runs of the vent pipe.

e. Radon vent fans mounted on the exterior of buildings must be rated for outdoor use or installed in a water tight protective housing.

f. Radon vent fans must be mounted and secured in a manner that minimizes transfer of vibration to the structural framing of the building.

g. To facilitate maintenance and future replacement, radon vent fans must be installed in the vent pipe using removable couplings or flexible connections that can be tightly secured to both the fan and the vent pipe.

h. The intakes of fans used in crawlspace pressurization, or in pressurizing the building itself, must be screened or filtered to prevent ingestion of debris or personal injury. Screens or filters must be removable to permit cleaning or replacement and building owners must be informed of the need to periodically replace or clean such screens and filters. This information must also be included in the documentation specified in 180 NAC 11-012.13.

3. Suction Pit Requirement for Sub-Slab Depressurization (SSD) Systems

a. To provide optimum pressure field extension of the subslab communication zone, adequate material must be excavated from the area immediately below the slab penetration point of SSD system vent pipes.

4. Sealing Requirements

a. Sump pits that permit entry of soil-gas or that would allow conditioned air to be drawn into a sub-slab depressurization system must be covered and sealed with materials specified in 180 NAC 11-012.10, item 7. The covers on sumps that previously provided protection or relief from surface water collection must be fitted with a water or mechanically trapped drain.

b. Openings around radon vent pipe penetrations of the slab, the foundation walls, or the crawlspace soil-gas retarder membrane must be cleaned, prepared, and sealed in a permanent, air-tight manner using compatible caulks or other sealant materials as specified in 180 NAC 11-012.10, item 5. Openings around other utility penetrations of the slab, walls, or soil-gas retarder must also be sealed.

c. Where a Block Wall Depressurization (BWD) system is used to mitigate radon, openings in the tops of such walls and all accessible openings or cracks in the interior surfaces of the walls must be closed and sealed

with polyurethane or equivalent caulks, expandable foams, or other fillers and sealants as specified in 180 NAC 11-012.10, items 5 and 6. Openings or cracks that are determined to be inaccessible or beyond the ability of the licensee to seal must be disclosed to the client and included in the documentation specified in 180 NAC 11-012.13.

d. Openings, perimeter channel drains, or cracks that exist where the slab meets the foundation wall (floor-wall joint), must be sealed with urethane caulk or equivalent material. When the opening or channel is greater than 1/2 inch in width, a foam backer rod or other comparable filler material must be inserted in the channel before application of the sealant. This sealing technique must be done in a manner that retains the channel feature as a water control system. Openings or cracks that are determined to be inaccessible or beyond the ability of the licensee to seal must be disclosed to the client and included in the documentation.

e. When installing baseboard-type suction systems, all seams and joints in the baseboard material must be joined and sealed using materials recommended by the manufacturer of the baseboard system. Baseboards must be secured to walls and floors with adhesives designed and recommended for such installations. If a baseboard system is installed on a block wall foundation, the tops of the blockwall must be closed and sealed as prescribed in 180 NAC 11-012.09, item 5(c).

f. Any seams in soil-gas retarder membranes used in crawlspaces for sub-membrane depressurization systems must be overlapped at least 12 inches and must be sealed. To enhance the effectiveness of sub-membrane depressurization systems, the membrane must also be sealed around interior piers and to the inside of exterior walls to the extent possible.

g. In combination basement/crawlspace foundations, where the crawlspace has been confirmed as a source of radon entry, access doors and other openings between the basement and the adjacent crawlspace must be closed and sealed. Access doors required by code must be fitted with air tight gaskets and a means of positive closure, but must not be permanently sealed. In cases where both the basement and the adjacent crawlspace areas are being mitigated with active SSD and SMD systems, sealing of the openings between those areas is not required.

h. When crawlspace depressurization is used for radon mitigation, openings and cracks in floors above the crawl-space which would permit conditioned air to pass out of the living spaces of the building, must be identified, closed, and sealed. Sealing of openings around hydronic heat or steam pipe penetrations must be done using non-

combustible materials. Openings or cracks that are determined to be inaccessible or beyond the ability of the licensee to seal must be disclosed to the client and included in the documentation.

5. Electrical Requirements

a. Wiring may not be located in or chased through the mitigation installation ducting or any other heating or cooling ductwork.
b. Any plugged cord used to supply power to a radon vent fan must be no longer than six feet in length.
c. No plugged cord may penetrate a wall or be concealed within a wall.
d. Radon mitigation fans installed on the exterior of buildings must be hard-wired into an electrical circuit. Plugged fans must not be used outdoors.
e. If the rated electricity requirements of a radon mitigation system fan exceeds 50% of the circuit capacity into which it will be connected, or if the total connected load on the circuit (including the radon vent fan) exceeds 80% of the circuit's rated capacity, a separate, dedicated circuit must be installed to power the fan.
f. An electrical disconnect switch or circuit breaker must be installed in radon mitigation system fan circuits to permit deactivation of the fan for maintenance or repair (Disconnect switches are not required with plugged fans).

6. Drain Installation Requirements

a. If condensate drains from air conditioning units terminate beneath the floor slab, the licensee must install a trap in the drain that provides a minimum six-inch standing water seal depth, reroute the drain directly into a trapped floor drain, or reconnect the drain to a condensate pump.

b. When a sump pit is the only system in a basement for protection or relief from excess surface water and a cover is installed on the sump for radon control, the cover must be recessed and fitted with a trapped drain meeting the requirements specified in 180 NAC 11-012.09, item 5(a).

7. HVAC Installation Requirements

a. Modifications to an existing HVAC system, which are proposed to mitigate elevated levels of radon, should be reviewed and approved by the original designer of the system (when possible) or by a licensed mechanical contractor.

b. Foundation vents, installed specifically to reduce indoor radon levels by increasing the natural ventilation of a crawlspace, must be non-closeable. In areas subject to freezing conditions, water supply and

other kinds of pipes or equipment, which could be damaged by freezing must be insulated or otherwise protected from freezing.

c. Heat Recovery Ventilation (HRV) systems must not be installed in areas of the building that contain friable asbestos.

d. In HRV installations, supply and exhaust ports in the interior must be located a minimum of 12 feet apart. The exterior supply and exhaust ports must be positioned a minimum of 12 inches (30 cm) above the ground to avoid blockage by snow or leaves and be a minimum of 10 feet apart. Exterior supply /intake ports must be located away from areas where stored material or equipment could block airflow. Exterior supply/intake ports must be kept away from where car and truck exhaust or other air pollutants may be present.

e. Licensees installing HRV systems must verify that the incoming and outgoing airflow is balanced to ensure that the system does not create a negative pressure within the building. Licensees must inform building owners that periodic filter replacement and inlet grill cleaning are necessary to maintain a balanced airflow. This information must also be included in the documentation specified in 180 NAC 11-012.13.

f. Both internal and external intake and exhaust vents in HRV systems must be covered with wire mesh or screening to prevent entry of animals or debris or injury to occupants.

11-012.10 Materials

1. All mitigation system electrical components must be U.L. listed or of equivalent specifications.

2. As a minimum, all plastic vent pipes in mitigation systems must be made of Schedule 20 PVC, ABS or equivalent piping material.

3. Vent pipe fittings in a mitigation system must be of the same material as the vent pipes unless flexible, airtight rubber couplings are used when installing vent fans or when installing radon vent pipes in sump pit covers.

4. Cleaning solvents and adhesives used to join plastic pipes and fittings must be as recommended by manufacturers for use with the type of pipe material used in the mitigation system.

5. When sealing cracks in slabs and other small openings around penetrations of the slab and foundation walls, caulks and sealants designed for such application must be used.

6. When sealing holes for plumbing rough-in or other large openings in slabs and foundation walls that are below the ground surface, non-shrink mortar, grouts,

expanding foam, or similar materials designed for such application must be used.

7. Sump pit covers must be made of durable plastic or other rigid material and designed to permit air-tight sealing. To permit easy removal for sump pump servicing, the cover must be sealed using silicone or other non-permanent type caulking materials or an air-tight gasket.

8. Penetrations of sump covers to accommodate electrical wiring, water ejection pipes, or radon vent pipes must be designed to permit air-tight sealing around penetrations, using caulk or grommets.

9. Plastic sheeting installed in crawlspaces as soil-gas retarders must be a minimum of 6 mil (3 mil cross-laminated) polyethylene or equivalent flexible material.

10. Any wood in contact with soil or concrete and is used in attaching soil-gas retarder membranes to crawlspace walls or piers must be pressure treated or naturally resistant to decay and termites.

11-012.11 Monitors and Labeling

1. All active soil depressurization and block wall depressurization radon mitigation systems must include a mechanism to monitor system performance and warn of system failure. The mechanism must be simple to read or interpret and be located where it is easily seen or heard by building occupants and protected from damage or destruction.

2. Electrical radon mitigation system monitors (whether visual or audible) must be installed on non-switched circuits and be designed to reset automatically when power is restored after service or power supply failure. Battery operated monitoring devices may not be used unless they are equipped with a low power warning feature.

3. Mechanical radon mitigation system monitors, such as manometer type pressure gauges, must be clearly marked to indicate the range or zone of pressure readings that existed when the system was initially activated.

4. One central system description label must be placed on the mitigation system, the electric service entrance panel, or other prominent location. This label must be legible from a distance of at least three feet and include the following information: "Radon Reduction System," the installer's name, phone number, and license number, the date of installation, and an advisory that the building should be tested for radon at least every two years or as required or recommended by state or local agencies. In addition, all visible radon mitigation system vent pipe sections must be identified with at least one label on each floor level. The label will read, "Radon Reduction System."

5. The circuit breakers controlling the circuits on which the radon vent fan and system failure warning devices operate must be labeled "Radon Reduction System."

11-012.12 Post-Mitigation Testing

1. After installation of an active radon control system (e.g., SSD), the licensee must re-examine and verify the integrity of the fan mounting seals and all joints in the interior vent piping.

2. After installation of any active radon mitigation system, the licensee must measure suctions or flows in system piping or ducting to assure that the system is operating as designed.

3. Immediately after installation and activation of any active (fan-powered) sub-slab depressurization or block wall depressurization system in buildings containing natural draft combustion appliances, the building must be tested for backdrafting of those appliances. Any backdrafting condition that results from installation of the radon mitigation system must be corrected before the system is placed in operation.

   The following checklist has been extracted from various references and may be used to test for existing or potential backdrafting conditions:

   a. Close all windows and doors, both external and internal.
   b. Open all HVAC supply and return air duct vents/registers.
   c. Close fireplace and wood stove dampers.
   d. Turn on all exhaust and air distribution fans and combustion appliances EXCEPT the appliance being tested for backdrafting.
   e. Wait five minutes.
   f. To begin a test for actual spillage of flue gases, turn on the appliance being tested. (If the appliance is a forced air furnace, ensure that the blower starts to run before proceeding.)
   g. Using either a smoke tube or a carbon dioxide gas analyzer, check for flue gas spillage near the vent hood after the appliance has been running five minutes.
   h. Repeat steps (d) through (g) for each natural draft combustion appliance being tested for backdrafting. Seasonal and extreme weather conditions should be considered when evaluating pressure differentials and the potential for backdrafting.
   i. If spillage is confirmed from any natural draft combustion appliance, clients must be advised of the backdrafting condition and that active (fan-powered) radon mitigation systems cannot be installed until the condition has been corrected. Licensees should advise the client to contact an HVAC contractor if correcting an existing or potential backdrafting condition is necessary.

4. Upon completion of radon mitigation work, the licensee must take steps to

ensure that the effectiveness of the radon reduction system is demonstrated using one of two approaches: 1) the licensee leaves an approved radon test kit with the homeowner and instructs that person, in writing, that a radon test should be performed using the supplied radon test kit or any other approved test kit or 2) the required radon test is performed by a licensed radon measurement specialist. If the mitigation specialist is licensed as a measurement specialist and conducts the test, and the homeowner accepts the test results as satisfactory evidence of system effectiveness, further post-mitigation testing is not required. However, to avoid the appearance of conflict of interest, the licensee must recommend to the homeowner that a post-mitigation measurement be conducted by an independent licensed radon measurement specialist or by the homeowner.

5. Post-mitigation tests must be of sufficient type, duration, and consistency to allow for comparison of pre- and post-mitigation levels. The post-mitigation test must be started no sooner than 24 hours, nor longer than 30 days after mitigation. All measurements must be conducted in accordance with the requirements of 180 NAC 11-013.01.

6. To ensure continued effectiveness of the radon mitigation system(s) installed, the licensee must advise the client to retest the building at least every two years or if the building undergoes significant alteration.

11-012.13 Upon completion of the mitigation project, the licensee must provide the homeowner with an information package that includes:

1. Any building permits required by local codes.
2. Copies of the Building Investigation Summary and floor plan sketch.
3. Pre-and post-mitigation radon test data.
4. Copies of contracts and warranties.
5. A description of the mitigation system installed and its basic operating principles.
6. A description of any deviations from 180 NAC 11 that has been approved by the Department.
7. A description of the proper operating procedures of any mechanical or electrical systems installed, including manufacturer's operation and maintenance instructions and warranties.
8. A list of appropriate actions for clients to take if the system failure warning device indicates system degradation or failure.
9. The name, telephone number, and license numbers of the person installing the system, and the phone number of the state radon office.

11-013 PROFICIENCY REQUIREMENTS

11-013.01 Radon Measurement Proficiency

1. Specialists/technicians must demonstrate proficiency by completing the following requirements:

a. Submit and follow an approved quality assurance and quality control plan for the measurement device, including the use of duplicates, blanks, and spikes as described in the Protocols for Radon and Radon Decay Product Measurements in Homes, Publication No. EPA 402-R-92-003, May 1993 and Indoor Radon and Radon Decay Product Measurement Device Protocols, Publication No. EPA 402-R-92-004, July 1992, incorporated herein by this reference and available for viewing at the Department of Health and Human Services Regulation and Licensure, 301 Centennial Mall South, 3rd Floor, Lincoln, Nebraska 68509-5007.
b. Have and use standard operating procedures (SOPs).
c. Provide proof of calibration(s) prior to use of the device.

2. Complete continuing education requirements specified under 180 NAC 11-013.03.

180-013.02 Radon Mitigation Proficiency

1. Specialists/technicians must follow 180 NAC 11-012 Mitigation System Installation Requirements.

2. Complete continuing education requirements specified under 180 NAC 11-013.03.

180-013.03 Continuing Education Requirements

1. A licensed individual must annually complete at least three hours of radon courses, seminars, or meetings offered or approved by the Department

2. Instructors of radon-related courses or seminars may apply to the Department for continuing education credit, which will be determined by the Department. To receive continuing education credit for instruction, the person requesting credit must submit to the Department the following information:

a. Name, address, and telephone number of the instructor;
b. Biography or credentials of instructor;
c. Type of course, frequency of course offerings, total hours of supervised instruction, and an agenda outlining the hours of instruction, describing the subject matter to be included; and
d. A copy of the certificate issued upon completion of the course.

3. Continuing education credit will only be valid for one year from date of attendance. Credit will not be granted for attendance of a duplicate course during the licensing period.

4. Exemptions:

a. If an individual holds a measurement and a mitigation license, a minimum of five hours of continuing education must be completed annually.
b. If an individual attends an approved radon measurement or mitigation training course after initial licensure, the continuing education credit earned remains valid for three years from date of course attendance.

11-014 APPROVAL OF COURSES AND EXAMS

11-014.01 Approval of Radon Measurement Training Courses: To be approved as a radon measurement training course, a course must meet and maintain approval by the National Environmental Health Association (NEHA) or National Radon Safety Board (NRSB) as an entry level or initial radon measurement course and must meet for a minimum of 16 hours or apply for approval as an alternative measurement course.

1. The course provider must submit:

   a. An application containing the course provider's name, address, phone number, and biographies of all individuals instructing participants in the training course.
   b. Documentation showing approval from NEHA or NRSB specified in 180 NAC 11-014.01.
   c. A copy of the certificate issued upon completion of the course.

2. To apply for approval as an alternative measurement course, a course provider must meet the following requirements:

   a. Submit an application containing the course provider's name, address, phone number, and biographies of all individuals instructing participants in the training course.
   b. Submit documentation that the course will meet for a minimum of 16 hours with instruction on the following topics:

      (1) course objectives;
      (2) radioactivity, radon, and radon's health effects;
      (3) radon entry and behavior;
      (4) radon measurement devices, techniques, and protocols;
      (5) quality assurance and quality control;
      (6) worker health and safety;
      (7) measuring radon in water; and
      (8) an overview of radon mitigation techniques.

   c. Provide an opportunity for course participants to evaluate the course instructor(s) and materials.
   d. Submit a copy of the certificate issued upon completion of the course.

11-014.02 Approval of Radon Mitigation Training Courses: To be approved as a radon mitigation training course, a course must meet and maintain approval by the National

Environmental Health Association (NEHA) or National Radon Safety Board (NRSB) as an entry level or initial radon mitigation course and must meet for a minimum of 20 hours or apply for approval as an alternative mitigation course.

1. The course provider must submit:

   a. An application containing the course provider's name, address, phone number, and biographies of all individuals instructing participants in the training course.
   b. Documentation showing approval from NEHA or NRSB specified in 180 NAC 11-014.02.
   c. A copy of the certificate issued upon completion of the course.

2. To apply for approval as an alternative mitigation course, a course provider must meet the following requirements:

   a. Submit an application containing the course provider's name, address, phone number, and biographies of all individuals instructing participants in the training course.
   b. Submit documentation that the course will meet for a minimum of 20 hours with instruction on the following topics:

      (1) course objectives;
      (2) radon mitigation system design, diagnostics, and installation;
      (3) radon in water mitigation; and
      (4) radon-resistant new construction.

   c. Provide an opportunity for course participants to evaluate the course instructor(s) and materials.
   d. Submit a copy of the certificate issued upon completion of the course.

11-014.03 Approval of Radon Examinations

1. To successfully pass an examination on radon measurements, an individual must achieve or exceed the minimum passing scores on an examination provided by the National Environmental Health Association (NEHA) or the National Radon Safety Board (NRSB).

2. To successfully pass an examination on radon mitigation, an individual must achieve or exceed the minimum passing scores on an examination provided by the National Environmental Health Association (NEHA) or the National Radon Safety Board (NRSB).

11-014.04 Approval of Continuing Education Courses, Workshops, and Seminars

1. A course, workshop, or seminar about radon offered or sponsored by the Department will be accepted for the number of credits listed by the Department.

2. A course, workshop, or seminar about radon offered or approved by the National Environmental Health Association or the National Radon Safety Board will be accepted for the number of credits listed by the respective organization.

3. A course, workshop, or seminar about radon, not meeting the requirements of 180 NAC 11-014.04 item 1 or 2, that is attended or taught by the licensee will be accepted towards one hour of continuing education per hour of instruction and must apply for credit by submitting the following:

   a. Name, address, and telephone number of applicant;
   b. Biography or credentials of instructor;
   c. Type of course, frequency of course offerings, total hours of supervised instruction, and an agenda outlining the hours of instruction, describing the subject matter to be included; and
   d. A copy of the certificate issued upon completion of the course.

11-015 REPORTING REQUIREMENTS

11-015.01 A radon measurement business or approved analytical laboratory must submit to the Department, by the last day of each month, the results of all radon measurements performed in the State of Nebraska during the previous month. The absence of radon measurements must be reported monthly to the Department.

1. Residential radon measurement reports must contain the following:

   a. Name of property owner, and street address (including city, state, and Zip Code).
   b. Name of person performing measurement, testing dates, total time of measurement in hours, location of test device (including story and room), type of test device, device identification number, whether a radon mitigation system is present, and radon test results.
   c. Name and license number of radon measurement business and radon measurement specialist.

2. Nonresidential radon measurement reports must contain the following:

   a. Name of facility, type of facility, street address (including city, state, and Zip Code) and phone number, name of contact person, name of property owner.
   b. Name of person performing measurement, testing dates, total time of measurement in hours, location of test device (including story and room), type of test device, device identification number, whether a radon mitigation system is present, and radon test results.
   c. Name and license number of radon measurement business and radon measurement specialist.

11-015.02 Radon measurement businesses and radon mitigation businesses must report test results for radon in writing to the client. Any person who is informed of the results of radon measurements must also be informed of the date, test, name, and license number of the person who made the measurements. Radon results must be reported in picocuries per liter. Radon progeny results must be reported in working levels.

11-015.03 In addition, the radon measurement business must notify the client by telephone and mail within two business days of any measurement with results equal to or greater than 100 pCi/l or 0.5 WL and advise the client to contact the Department at 1-800-334-9491 or at other telephone numbers provided by the Department. The results of this measurement must also be provided to the Department by phone and mailed within the same two-business day period.

11-015.04 The radon mitigation business must submit to the Department, by the last day of each month, a report on all mitigation work completed during the previous month, including the floor plans and equipment arrangement of the mitigation system, or modifications of existing systems, and the mitigation fee(s) (per installation) as specified in 180 NAC 11-017.01, item 7. The absence of mitigation work must be reported monthly to the Department.

1. Residential radon mitigation reports must contain the following:

   a. Name of property owner, and street address (including city, state, and Zip Code).
   b. Pre-mitigation testing dates, location of test device (including story and room), type of test device, device identification number, radon test results, and measurement business responsible for tests (or occupant).
   c. Post-mitigation testing dates, location of test device (including story and room), type of test device, device identification number, radon test results, and measurement business responsible for tests (or occupant).
   d. Date mitigation completed and type of mitigation system(s) installed.
   e. Name and license number of radon mitigation business and radon mitigation specialist.

2. Nonresidential radon mitigation reports must contain the following:

   a. Name of facility, building street address (including city, state, and Zip Code), name and phone number of contact person, number of stories and number of occupied stories in building; name and address of property owner.
   b. Pre-mitigation testing dates, location of test device (including story and room), type of test device, device identification number, radon test results, and measurement business responsible for tests (or occupant).
   c. Post-mitigation testing dates, location of test device (including story and room), type of test device, device identification number, radon test results, and measurement business responsible for tests (or occupant).
   d. Date mitigation completed and type of mitigation system(s) installed.

e. Name and license number of radon mitigation business and radon mitigation specialist.

3. Fees specified in 180 NAC 11-017.01, item 7 must be submitted for each mitigation system installation. For fee calculation purposes, one mitigation installation is equivalent to any of the following:

a. Each individual house that has had a mitigation system installed or mitigation performed.
b. Each separate mitigation system or depressurization system in a nonresidential building or an apartment complex.

Example: Individual vent pipes from two suction points connected together to vent through one pipe, fan, and exhaust point is considered one system.

Example: Individual vent pipes from two suction points routed to vent through two separate pipes, fans, and exhaust points is considered two systems.

11-016 RECIPROCITY: A person who has a valid license or certification from a state which licenses or certifies persons who measure or mitigate radon in a certification or licensing program with requirements determined by the Department as comparable with the provisions of this may be licensed by the Department upon submission of an application as specified in 180 NAC 11-005, 11-006, 11-007, 11-008, 11-009, and 11-010, with a copy of the certification or license from the other state, along with the fee specified in 180 NAC 11-017.

11-017 FEES (Nonrefundable except as provided by law):

11-017.01 Fees for Radon Measurement Specialist, Radon Measurement Technician, Radon Mitigation Specialist and Radon Mitigation Technician listed below also include $1.00 per year for the License Assistance Program:

1. Radon Measurement Specialist

Initial Application Fee	$ 45.00 + $1.00 = $46.00
Annual Renewal Fee	$ 45.00 + $1.00 = $46.00

2. Radon Measurement Technician

Initial Application Fee	$ 45.00 + $1.00 = $46.00
Annual Renewal Fee	$ 45.00 + $1.00 = $46.00

3. Radon Mitigation Specialist

Initial Application Fee	$ 45.00 + $1.00 = $46.00
Annual Renewal Fee	$ 45.00 + $1.00 = $46.00

4. Radon Mitigation Technician

Initial Application Fee	$ 45.00 + $1.00 = $46.00
Annual Renewal Fee	$ 45.00 + $1.00 = $46.00

5. Radon Measurement Business (Annual) Fee $100.00

6. Radon Mitigation Business (Annual) Fee $250.00

7. Mitigation Fee per installation $ 50.00

8. a. Proration of Initial License Fee: For issuance of a specialist or technician license that will expire within 180 days after its initial issuance date, a fee of $25 and $1 for the Licensee Assistance Program fee.

c. Proration of Initial Radon Measurement Business License Fee: For issuance of a radon measurement business license that will expire within 180 days after its initial issuance date, a fee of $50.00.

d. Proration of Initial Radon Mitigation Business License Fee: For issuance of a radon mitigation business license that will expire within 180 days after its initial issuance date, a fee of $125.00.

9. Late Fee: By an applicant for renewal on an annual basis of a license, who fails to pay on or before the expiration date of his/her license, the fee of $25 as a late fee in addition to the renewal fee.

10. Certification of License Fee: For issuance of a certification of a license, the fee of $25. The certification includes information regarding the basis on which a license was issued, the date of issuance, whether disciplinary action has been taken against the license, and the current status of the license.

11. Verification of License Fee: For issuance of a verification of a license the fee of $5. The verification includes written confirmation as to whether a license was valid at the time the request was made.

12. Duplicate License Fee: For a duplicate of original license document or reissued license, the fee of $10.

13. Administrative Fee: For a denied license or a withdrawn application, the administrative fee of $25 will be retained by the Department.

11-018 ADMINISTRATIVE PENALTY

11-018.01 Administrative Penalty: The Department may assess an administrative penalty when evidence exists that a person or entity practices without a license. Practice without a license for the purpose of this regulation means practice:

1. Prior to the issuance of a license;
2. Following the expiration of a license; or
3. Prior to the reinstatement of a license.

11-018.02 Evidence of Practice: The Department will consider any of the following conditions as prima facie evidence of practice without a license:

1. The person admits to engaging in practice;
2. Staffing records or other reports from the employer of the person indicate that the person was engaged in practice;
3. Billing or payment records document the provision of service, care, or treatment by the person;
4. Service, care, treatment records document the provision of service, care, or treatment by the person;
5. Appointment records indicate that the person was engaged in practice;
6. Other government records indicate that the person was engaged in practice; and
7. The person or entity opens a business or practice site and announces or advertises that the business or site is open to provide service, care, or treatment.

For purposes of this regulation prima facie evidence means a fact presumed to be true unless disproved by some evidence to the contrary.

11-018.03 Penalty: The Department may assess an administrative penalty in the amount of $10 per day, not to exceed a total of $1,000 for practice without a license. To assess such penalty, the Department will:

1. Provide written notice of the assessment to the person. The notice will specify:

   a. The total amount of the administrative penalty;
   b. The evidence on which the administrative penalty is based;
   c. That the person may request, in writing, a hearing to contest the assessment of an administrative penalty;
   d. That the Department will within 30 days following receipt of payment of the administrative penalty, transmit the penalty to the State Treasurer for credit to the Permanent School Fund; and
   e. That an unpaid administrative penalty constitutes a debt to the State of Nebraska which may be collected in the manner of a lien foreclosure or sued for and recovered in a proper form of action in the name of the state in the District Court of the county in which the violator resides or owns property.

2. Send by certified mail, a written notice of the administrative penalty to the last known address of the person to whom the penalty is assessed.

11-018.04 Administrative Hearing: When a person contests the administrative penalty and requests a hearing, the Department will hold a hearing pursuant to Neb. Rev. Stat. §§ 84-901 to 84-920 and the Department's rules and regulations adopted pursuant to these statutes.

EFFECTIVE DATE
JANUARY 28, 2007

RADON MEASUREMENT SPECIALIST OR TECHNICIAN LICENSE APPLICATION

PER Title 180, Regulations for Control of Radiation, Chapter 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services.

APPLICATION FOR: (Check only one)

[ ] RADON MEASUREMENT SPECIALIST 180 NAC 11-005
[ ] RADON MEASUREMENT TECHNICIAN 180 NAC 11-006

RADON LICENSURE FEES

Determine the month in which you are submitting your application. Pay the amount in the corresponding box per license you are applying for. All fees are nonrefundable except as provided by law.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
$26	$26	$26	$46	$46	$46	$46	$46	$46	$26	$26	$26

PART I. APPLICANT INFORMATION

Name_____ Social Security #_____

Permanent Mailing Address _____

City _____ State _____ Zip Code _____

Telephone Numbers Home _____ Work _____

E-Mail Address _____ Birth date _____

Has your license in any profession in another state been revoked, suspended, limited, or disciplined in any manner? YES _____ NO _____
If yes, applicant must provide an official copy of the disciplinary action.

Have you been convicted of a misdemeanor or felony? YES _____ NO _____
If yes, applicant must contact Nebraska Radon Program office for additional direction.

TRAINING:

Name of Course Dates of Attendance Location

_____

_____

_____

● Attach a copy of your training certificate or a letter of successful completion and a copy of your exam results.

PART II. ATTESTATION

I attest that this application has been prepared in accordance with 180 NAC 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services and all information contained herein, including any supplements attached hereto, is true and correct to the best of my knowledge and belief.

_____ _____

Signature of Applicant Date

Send your letter of application, attachments and appropriate fee (See 180 NAC 11-017), with **check(s) made payable to Nebraska Department of Health and Human Services Regulation and Licensure** to:

Nebraska Radon Program
NDHHS-R&L
P.O. Box 95007
301 Centennial Mall South
Lincoln, NE 68509-5007

Omission of any of the required documents or incomplete information will delay review of your application and issuance of a license.

EFFECTIVE DATE
JANUARY 28, 2007

RADON MITIGATION SPECIALIST OR TECHNICIAN LICENSE APPLICATION

PER Title 180, Regulations for Control of Radiation, Chapter 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services.

APPLICATION FOR: (Check only one)

[ ] RADON MITIGATION SPECIALIST 180 NAC 11-007

[ ] RADON MITIGATION TECHNICIAN 180 NAC 11-008

RADON LICENSURE FEES

Determine the month in which you are submitting your application. Pay the amount in the corresponding box per license you are applying for. All fees are nonrefundable except as provided by law.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
$26	$26	$26	$46	$46	$46	$46	$46	$46	$26	$26	$26

PART I. APPLICANT INFORMATION

Name_____ Social Security #_____

Permanent Mailing Address _____

City _____ State _____ Zip Code _____

Telephone Numbers Home _____ Work _____

E-Mail Address _____ Birth date _____

Has your license in any profession in another state been revoked, suspended, limited, or disciplined in any manner? YES _____ NO _____
If yes, applicant must provide an official copy of the disciplinary action.

Have you been convicted of a misdemeanor or felony? YES _____ NO _____
If yes, applicant must contact Nebraska Radon Program office for additional direction.

TRAINING:

Name of Course Dates of Attendance Location

_____

_____

_____

● Attach a copy of your training certificate or a letter of successful completion and a copy of your exam results.

EXPERIENCE:

Name of Business | Name of Supervisor | Dates Employed

_____

_____

_____

_____

● Attach a copy of your resume.

EDUCATION: (If applicable)

College or University | Dates of Attendance | Primary Course of Study | Degree

_____

_____

_____

● Attach a copy of your transcript.

PART II. ATTESTATION

I attest that this application has been prepared in accordance with 180 NAC 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services and all information contained herein, including any supplements attached hereto, is true and correct to the best of my knowledge and belief.

_____ _____

Signature of Applicant | Date

Send your letter of application, attachments and appropriate fee (See 180 NAC 11-017), with **check(s) made payable to Nebraska Department of Health and Human Services Regulation and Licensure** to:

Nebraska Radon Program
NDHHS-R&L
P.O. Box 95007
301 Centennial Mall South
Lincoln, NE 68509-5007

Omission of any of the required documents or incomplete information will delay review of your application and issuance of a license.

EFFECTIVE DATE
JANUARY 28, 2007

RADON BUSINESS LICENSE APPLICATION

PER Title 180, Regulations for Control of Radiation, Chapter 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services

APPLICATION FOR: (Check only one)

[ ] RADON MEASUREMENT BUSINESS

[ ] RADON MITIGATION BUSINESS

PART I. APPLICANT INFORMATION

Name of Applicant _____

Name of Business _____

Street Address _____

City _____ State _____ Zip Code _____

Telephone Numbers Phone _____ FAX _____

E-Mail Address _____

PART II. RADON MEASUREMENT BUSINESS

Analytical Laboratories to Be Used

_____	_____
Name of Laboratory	Name of Laboratory
_____	_____
Street Address	Street Address
_____	_____
City State Zip Code	City State Zip Code

Attachments

____ Description of all radon measurement techniques and services offered, the purpose of each service, the type of measurement equipment, a summary of the procedure to be used, and an explanation of how that equipment and procedure will meet the intended purpose.

____ Copies of licenses of all radon measurement specialists and technicians employed or used as consultants.

____ Description of the quality assurance and quality control plans for each service and technique provided.

____ Sample copy of all reporting forms used to inform clients of measurement results, including any guidance concerning the need for further measurements or mitigation.

____ Description of the health and safety program to estimate employees' exposure to radon during employment.

Fees

EFFECTIVE DATE
JANUARY 28, 2007

Determine the month in which you are submitting your application. Pay the amount in the corresponding box. All fees are nonrefundable except as provided by law.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
$50	$50	$50	$100	$100	$100	$100	$100	$100	$50	$50	$50

PART III. RADON MITIGATION BUSINESS

Licensed Radon Measurement Businesses and Specialists to Be Used

_____ _____
Name of Laboratory Name of Laboratory

_____ _____
Street Address Street Address

_____ _____
City State Zip Code City State Zip Code

Attachments

_____ Description of all mitigation materials and systems offered, diagnostic tests performed, and other related services.

_____ Description of procedures and instruments used to perform diagnostic tests.

_____ Copies of licenses of all radon mitigation specialists and technicians employed or used as consultants.

_____ Sample copy of each reporting form given to clients.

_____ Description of the health and safety program to estimate employees' exposure to radon during employment.

Fees

Determine the month in which you are submitting your application. Pay the amount in the corresponding box. All fees are nonrefundable except as provided by law.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
$125	$125	$125	$250	$250	$250	$250	$250	$250	$125	$125	$125

PART IV. ATTESTATION

I attest that this application has been prepared in accordance with 180 NAC 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services and all information contained herein, including any supplements attached hereto, is true and correct to the best of my knowledge and belief.

_____ _____
Signature of Applicant Date

Send your letter of application, attachments and appropriate fee (See 180 NAC 11-017), with **check(s) made payable to Nebraska Department of Health and Human Services Regulation and Licensure**

EFFECTIVE DATE
JANUARY 28, 2007
to:

Nebraska Radon Program
NDHHS-R&L
P.O. Box 95007
301 Centennial Mall South
Lincoln, NE 68509-5007

Omission of any of the required documents or incomplete information will delay review of your application and issuance of a license.

EFFECTIVE DATE
JANUARY 28, 2007

Radon Laboratory Approval Application

PER Title 180, Regulations for Control of Radiation, Chapter 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services

PART I. APPLICANT INFORMATION

Name of Applicant _____

Name of Business _____

Street Address _____

City _____ State _____ Zip Code _____

Telephone Numbers Phone _____ FAX _____

E-Mail Address _____

Is the laboratory participating in a national proficiency program? [ ] YES [ ] NO If yes, complete information below.
Name of Proficiency Program_____

Accreditation Number_____Expiration Date_____

- ❑ Provide a list by name, training, and experience of all specialists performing radon or radon progeny analysis.
- ❑ Attach completed measurement specialist application(s) and fee.
- ❑ Attach completed measurement business application and fee.
- ❑ Attach a description of the method used to calibrate radon measurement analysis instruments.

List instrumentation to be used for radon and/or radon progeny measurement. Attach additional sheets if necessary.

Type	Manufacturer	Model #	Serial #	Calibration frequency

PART II. ATTESTATION

I attest that this application has been prepared in accordance with 180 NAC 11, Requirements for Radon and Radon Progeny Measurement and Mitigation Services and all information contained herein, including any supplements attached hereto, is true and correct to the best of my knowledge and belief.

_____ _____

Signature of Applicant Date

EFFECTIVE DATE
JANUARY 28, 2007

Send your letter of application, attachments and appropriate fee (See 180 NAC 11-017), with **check(s) made payable to Nebraska Department of Health and Human Services Regulation and Licensure** to:

NDHHS-R&L Radon Program
P.O. Box 95007
301 Centennial Mall South
Lincoln, NE 68509-5007

Omission of any of the required documents or incomplete information will delay review of your application.